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Two New Species of *Melanoplus* from Alabama (Orthoptera: Acrididae)

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During the course of a survey of the Orthoptera of Alabama in 1959 I encountered two new species of the genus *Melanoplus* but did not describe them because of insufficient material. Since that time I have collected both species in sufficient numbers to warrant publication.

Melanoplus cantralli new species

In 1916 Rehn and Hebard established the *decorus* group of the genus *Melanoplus*. In this group they placed five species—*decorus* Scudder (1897), *australis* Morse (1904), *attenuatus* Scudder (1897), *hebardii* (Rehn) (1906), and *nubilis* Rehn and Hebard (1916). Now, *Melanoplus cantralli* may be added to this assemblage.

Although in many respects the most distinctive member of the *decorus* group, *cantralli* is most closely related to *hebardii* (Rehn). It may be differentiated from that species, and all other members of the group, by its larger size, more robust form, and very distinctive male terminalia. The antennal crescent in both sexes of *cantralli* is nearly as wide as the basal segment of the antenna; this crescent in the other five forms of the *decorus* group is less than one-half the width of the basal segment.

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Females of *cantralli* can likewise be differentiated from their nearest relatives by their larger size, more robust form, and furthermore by the presence of a light, diagonal, irregular stripe lying obliquely across the black postocular band on the pronotum. Other differences in minor features of the female subgenital plates and cercus are evident.

Holotype—Male. General appearance and coloration very similar to *M. hebaridi*. Antennal crescent broad and complete, at point of greatest width (0.41 mm) slightly less than width of first antennal segment (0.56 mm). Disk of pronotum with lateral carinae indistinct, outlined in color on prozona, subparallel, diverging slightly caudad; median carina well-developed throughout, cut only by principal sulcus; pencilled with black; caudal margin subtruncate; cephalic margin feebly rounded with slightest trace of median emargination; prozona (3.31 mm) less than twice as long as metazona (1.83 mm); lateral lobes distinctly longer than high; postocular black stripe terminating at cephalic margin of metazona, bearing two small yellowish-brown blotches separated by the coloration of the median sulcus. Tegmina dark yellow-brown, obovate (length 4.27 mm, width 2.50 mm), tips truncate, dorsal margins well separated. Cephalic and median femora yellow-brown. Caudal femora yellow-brown, knees blackened on outer and inner faces except for yellow-brown genicular lobes. Caudal tibiae pale glaucous, weakly infused with black dorso-distally. Spines of all tibiae black; calcars and spurs yellow-brown, tipped with black. Mesepimeron and metepimeron black; metepisternum peripherally black with disk yellow-brown. Abdomen yellow-brown; each tergite with a black suffusion laterally that becomes progressively smaller from the second to the ninth tergum. Cercus (Fig. a) tapering slightly from base to middle, then expanding to the rounded obovate apex, ventral margin broadly concave; entire cercus black except for a yellow-brown tinge on basal one-fourth and a light yellow-brown line around the dorsal and caudal rim of the apex. Furculae one-fourth length of supra-anal plate, strongly tapering in basal third, distal portions forming narrow, aciculate, parallel projections. Supra-anal plate

triangularly shield-shaped, longer than broad; lateral margins briefly concave then convex to the broadly rounded right-angled apex, in basal one-half raised into a distinct ridge (not plicate at distal end as in other members of the *decorus* group); in basal third of plate, and between furculae, a narrow sulcus lying between well-defined ridges which fuse, obliterate the sulcus, and form a single broad longitudinal ridge lying in the center of the plate; distal one-third of plate feebly hollowed out, lateral to this area a swollen raised bump extending evenly on each side to the margins of the plate (not forming the short, blunt, evenly convergent ridges as found in other species of this group). Subgenital plate broad at base, strongly narrowing to a feebly tuberculate apex. Aedeagus (Figs. b & c) with apex of each dorsal valve expanded into a broadly rounded lamella which is bent caudally and caudo-ventrally until, from a lateral view, it appears as a broad "C"-shaped structure; ventral valves a pair of rectangular plates extending from the broad base, the meso-apical angle of each plate elongated into a rounded lamella situated at right angles to the apical margin of the valve. Length of body from vertex to tip of abdomen 24.52 mm, from vertex to tip of caudal femora 25.95 mm; length of pronotum 5.14 mm; length of caudal femora 13.08 mm; greatest width of caudal femora 3.28 mm.

Allotype—Female. Similar in build and coloration to holotype except cephalic margin of pronotum feebly rounded, caudal margin of pronotum rounded-truncate with broad emargination, dark post-ocular stripe strongly interrupted by a diagonal yellow-brown line beginning below the stripe at the cephalic margin of the pronotum and extending to the junction of the principal sulcus and the lateral margins of the pronotum, lateral margins more divergent; caudal tibiae deep glaucous. Antennal crescent complete; greatest width 0.46 mm. Width of first antennal segment 0.68 mm. Length of tegmina 5.30 mm, greatest width of tegmina 2.89 mm. Cercus triangular with margins very slightly but distinctly concave, 0.75 mm in length, one-third longer than wide. Ovipositor with valves only moderately curved; dorsal angle of upper valve 153 degrees; upper

margin of dorsal valve with blunt irregular teeth. Lateral angle of eighth sternite 146 degrees. Notch of eighth sternite shallow. Length of body from vertex to tip of ovipositor valves 28.85 mm; from vertex to tip of caudal femora 29.16 mm; length of prozona 3.96 mm; length of metazona 2.09 mm; length of pronotum 6.05 mm; length of caudal femora 15.21 mm; greatest width of caudal femora 3.66 mm.

Variation: The most evident variation among the males is in the extent of the dark markings on the cercus. A few of the specimens show no black on the cercus; in most of the specimens, the extent of darkening is slightly less than that of the holotype. In the females, the extent of development of the light diagonal mark dividing the postocular dark stripe is the most evident variation. In most of the specimens the stripe is more distinct than in the allotype, but in one is only faintly indicated. The coloration of the caudal tibiae in both sexes also shows some variation. The tibiae range from a yellow-green darker than in the holotype to distinctly fuscous in the males, but in none are the tibiae deeply glaucous as in the allotype. The caudal tibiae are glaucous in most of the females, but in two specimens they are dark yellow-brown. The coloration in one female is very similar to that of the holotype. Males vary in body length from 21.2 to 26.5; females, from 22.5 to 28.3 mm.

Specimens examined: 27 males, 13 females, all collected by me.

Holotype: Escambia County, ALABAMA, 5 miles east of East Brewton on U. S. 29, August 25, 1962. Deposited in the Museum of Zoology, University of Michigan.

Allotype: Same data and depository as holotype.

Paratypes: 6 males, 2 females, same data as holotypes; 5 males, 1 female, same data as holotype except October 5, 1962; 1 male, Escambia County, 9.5 miles east of East Brewton, October 5, 1962; 3 males, 2 females, Escambia County, 8.4 miles southwest of Brewton, October 5, 1962; 8 males, 5 females, Escambia County, 1.2 miles north of Brewton, August 26, 1963; 2 males, 1 female, Baldwin County, 5 miles east of the Mobile Causeway, September 24, 1959; 1 male, Baldwin County, Gulf Coast Substation (near Fairhope), July 11, 1961. One

pair of paratypes deposited at each of the following: University of Michigan, Academy of Natural Sciences of Philadelphia, U. S. National Museum, and my personal collection; all others in the Auburn University Insect Museum.

Ecology: All specimens were taken from the litter and short vegetation of pine woods. At the type locality they were collected from open areas in a slash pine woods. They appeared to occur in small local colonies of several individuals and were taken by carefully trampling the dry pine needle litter. The specimens taken in other locations were from similar habitats.

This species is named in honor of I. J. Cantrall, University of Michigan, Museum of Zoology, whose advice and encouragement aided me during my survey of Alabama Orthoptera.

Melanoplus primaestivus new species

This species is a member of the *tribulus* group of the genus *Melanoplus* as recognized by Hebard (1935). In the size and shape of the furculae and cerci, it is more closely related to *M. delaware* than to any of the other eight species presently assigned to the group. *Primaestivus* can be recognized readily by its distinctive aedeagus.

Holotype—*Male*. General coloration light yellow-brown; dorsal surface of head, pronotum, legs, and abdomen heavily sprinkled with numerous dark brown spots. Postocular stripe percurrent on the pronotum, terminating on the mesepimeron. Basal one-half of second abdominal segment suffused with black. Antennal crescent complete, about one-half (greatest width 0.22 mm) width of basal antennal segment (0.40 mm). Disk of pronotum with lateral margins moderately diverging posteriorly; median carina distinct throughout, slightly higher on metazona (1.39 mm); lateral carinae indistinct. Tegmina oval, tips rounded; dorsal margins not attingent. Caudal tibiae yellow-brown with a slight bluish tinge. Cercus (Fig. d) much broader at base than at apex; feebly narrowed at middle; tip subtruncate with lower angle moderately prolonged; entire cercus curving slightly mesad. Furculae as minute rounded lobes; well separated. Supra-anal plate trigonal, slightly longer

than wide; basal one-fourth of lateral margin forming a blunt ridge feebly plicate at its caudal terminus; lateral margins weakly convex throughout, terminating in a sharply rounded right-angled apex. Aedeagus (Fig. e) with dorsal valves wrapped around ventral valves, the apical portion of the dorsal valves flaring strongly away from the ventral valves. Ventral valves like a pair of long, thin, attingent laminae, apices rounded and slightly divergent. Length of body: vertex to end of abdomen 18.42 mm; vertex to end of caudal femur 19.20 mm; length of pronotum 4.07 mm; length of caudal femur 9.88 mm; greatest width of caudal femur 2.62 mm; length of furcula 0.24 mm; length of supra-anal plate 1.67 mm; length of tegmen 3.59 mm; greatest width of tegmen 1.98 mm.

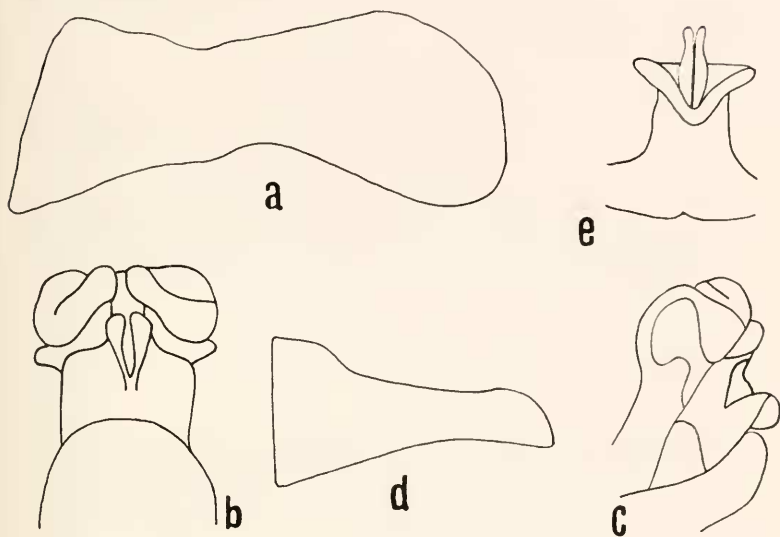
Allotype—Female. Coloration similar to that of holotype except for a slight reddish tinge throughout. Antennal crescent divided, much narrower (0.16 mm) than width of basal antennal segment (0.42 mm). Prozona (3.22 mm) slightly less than twice as long as metazona (1.90 mm). Cercus narrow, triangular, straight sided, tip acute, 0.77 mm in length. Upper valve of ovipositor with dorsal angle 136 degrees, armed with sharp evenly spaced teeth. Lateral angle of eighth sternite 150 degrees; eighth sternite without notching. Length of body from vertex to tip of ovipositor 24.25 mm; from vertex to end of caudal femur 21.94 mm; length of caudal femur 11.59 mm; greatest width of caudal femur 2.98 mm; length of pronotum 5.12 mm; greatest length of tegmen 4.44 mm; greatest width of tegmen 2.86 mm.

Variation: Very little variation occurs in the series except for the color of the caudal tibiae and the tips of the cerci of the males. Coloration of the caudal tibia varies from yellow-brown to glaucous in both sexes. The lower angle of the tip of the cercus in some specimens is not at all or only slightly prolonged, while in others it is more prolonged than in the holotype. Males in the series vary in body length from 16 to 19 mm; females range from 22 to 25 mm.

Specimens examined: 34 males, 22 females, all collected by me.

Holotype: Lawrence County, ALABAMA, 2 miles south of Wren, June 28, 1963. Deposited in the Museum of Zoology, University of Michigan.

Allotype: Same data and depository as holotype.



Melanoplus cantralli n. sp., holotype. a. Lateral view of left cercus. b. Caudal view of aedeagus. c. Lateral view of aedeagus.

Melanoplus primaestivus n. sp., holotype. d. Lateral view of left cercus. e. Caudal view of aedeagus.

Paratypes: 18 males, 14 females, same data as holotype; 1 male, 1 female, same as holotype except July 24, 1959; 2 males, Winston County, Alabama, Natural Bridge Recreation Area, Ala. 33, 1 mile north of U. S. 278, August 17, 1962; 12 males, 6 females, same as preceding except June 26-27, 1963. One pair of paratypes deposited at each of the following: University of Michigan, Academy of Natural Sciences of Philadelphia, U. S. National Museum, and my personal collection; all others in the Auburn University Insect Museum.

Ecology: All specimens were taken from leaf litter in oak-hickory woods. At the type locality the species was more abundant than at the Natural Bridge Recreation Area, where

specimens of *Melanoplus tepidus* Morse and *M. similis* Morse were taken at the same time. *M. primaestivus* is an early maturing form, reaching its peak abundance in late June or early July. The name *primaestivus* is from Latin (*prima* and *aestivus*) meaning first of the summer, indicating that it is an early maturing form.

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New Stoneflies from Idaho (Plecoptera)¹

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Several stoneflies new to Idaho are described and recorded here along with a list of stoneflies now known to occur in the state. Most of the data has been accumulated by the authors, but valuable material borrowed from Dr. W. F. Barr, Mr. S. D. (Skip) Smith, and Mr. Dick Logan, University of Idaho, Moscow, is gratefully acknowledged. Assistance from Mr. Stanley G. Jewett, Jr., is also gratefully acknowledged.

Capnia nedia new species

Male: Wings brachypterous, length of body 6 mm. First nine abdominal tergites without special modifications. No lobe on

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